Sweet Christmas

Citation for published version (APA):

Martijn, C., Pasch, S., & Roefs, A. (2016). Sweet Christmas: Do overweight and obese children associate special events more frequently with food than normal weight children? *Appetite*, 96(January), 426-431. <https://doi.org/10.1016/j.appet.2015.10.010>

Document status and date:

Published: 01/01/2016

DOI:

[10.1016/j.appet.2015.10.010](https://doi.org/10.1016/j.appet.2015.10.010)

Document Version:

Publisher's PDF, also known as Version of record

Document license:

Taverne

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

Sweet Christmas: Do overweight and obese children associate special events more frequently with food than normal weight children?[☆]

Carolien Martijn ^{a,*}, Sophie Pasch ^{a,b}, Anne Roefs ^a

^a Department of Clinical Psychological Science, Faculty of Psychology and Neuroscience, Maastricht University, The Netherlands

^b Klinik für Schmerztherapie und Palliativmedizin Medizinisches Zentrum StädteRegion Aachen GmbH, Germany

ARTICLE INFO

Article history:

Received 9 June 2015

Received in revised form

2 October 2015

Accepted 7 October 2015

Available online 15 October 2015

Keywords:

Spontaneous associations

Free-word association test

Special events

Food

Overweight children

ABSTRACT

This study examined children's spontaneous associations of special events with food. Children in primary education ($N = 111$, age between 10 and 13 years) at a school in Germany wrote down their first five associations with five special or festive events (Christmas, holidays, weekend, carnival and birthday). After completing the free-word association test, they were offered a choice between a candy and a toy. Finally, their body mass index (BMI) was measured. The first prediction was that overweight and obese children would associate special events more often with food than normal weight and leaner children. The second prediction was that choice for a candy would be predicted by a higher number of food-related associations. The first hypothesis was not supported: BMI was negatively related to number of food-related associations (the lower the BMI, the more food-related associations). The second hypothesis was also not supported: There was no relation between number of food-related associations and choice for a candy or toy. A possible explanation for the finding that leaner children reported more food-related associations is that for them specific sweets and snack food are more exclusively connected to special occasions than for overweight children. Speculatively, this may be the result of differences in food parenting styles between parents of heavier and leaner children. Parents of leaner children often have a more restrictive style, i.e., reserving specific foods for specific, relatively rare occasions whereas parents of overweight children adopt more liberal food rules.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

Apart from internal bodily states (e.g., gastric, hormonal), external factors affect what and how much we eat. It has been widely acknowledged that external cues such as the appeal or presentation of food (e.g., smell, taste, portion size, variety of food items) and eating setting (e.g., atmosphere, eating alone vs. in company, distraction) influence food consumption (Bellisle, Dalix, & Slama, 2004; Stroebele & De Castro, 2004; Wansink & Sobal, 2007; Wardle, 1990). The influence of these external cues on eating is larger for some individuals than for others, and especially overweight and obese individuals seem vulnerable to external influences (Herman & Polivy, 2008; Polivy, Herman, & Coelho, 2008;

Wansink, Payne, & Chandon, 2007).

An example of such an external cue is provided by early research (Schachter, 1968), which established that, as compared to normal weight participants, the food intake of obese persons is guided more by the smell and the palatability of food than by their internal bodily states. More recently, Ferriday and Brunstrom (2011) showed that a brief exposure to the sight and smell of pizza induced more salivation and a greater desire to consume pizza and other foods in overweight participants than in normal-weight participants. Similar results were found in children; when confronted with a food-related cue, such as smell, overweight children failed to regulate subsequent food intake and ate more than normal weight children who were exposed to the same smell (Jansen et al., 2003).

Eating can also be influenced by external cues that are seemingly unrelated to food (Stroebele & De Castro, 2004). For example, Bellisle et al. (2004) found that exposure to environmental, non food-related stimuli such as watching television or listening to a recorded story, caused women eat more during their lunch than when they ate in the absence of these stimuli. Salvé, Coelho, Kieffer,

[☆] We thank for Charlotte Uerlichs for her help in coding the data.

* Corresponding author. Department of Clinical Psychological Science, Faculty of Psychology and Neuroscience, Maastricht University, P.O. Box 616, 6200 MD Maastricht, The Netherlands.

E-mail addresses: c.martijn@maastrichtuniversity.nl (C. Martijn), sophie.pasch@mz-ac.de (S. Pasch), a.roefs@maastrichtuniversity.nl (A. Roefs).

and Epstein (2007) examined the differential impact of social context (eating alone or in the presence of others) in 6–10 year old children and observed that normal-weight children eat more when they are in the company of peers than when eating alone whereas overweight children showed exactly the opposite pattern, most likely for impression management reasons. Other recent studies show that environmental cues may influence the interpretation of an eating occasion. Cues such as paper versus cloth napkins, eating standing up versus being seated, determined whether people categorize an eating situation as “snacking” or as “having a meal” and may influence subsequent food intake (Wansink, Payne, & Shimizu, 2010).

Special events and festivities such as birthdays, holidays or Christmas may also form a cue for eating. Special events are represented by specific symbols, settings, actions and emotions, and often go together with special, out of the ordinary food and drinks (Kittler & Sucher, 2008, p. 10–11). Therefore, when people think of Christmas, they may think of a Christmas tree, going to church and peace on Earth, but also of roasted turkey, Christmas pudding and exquisite red wine (Holtzman, 2006). Associations between special events and food are often shared by an entire cultural group (most people in Western culture will associate Christmas with roasted turkey), but other associations are unique or only shared in a smaller group of individuals (e.g., a specific family tradition) (Kittler & Sucher, 2008). Food industry attempts to create food associations as well; in 1931 Coca Cola initiated a campaign to increase their sales during winter by showing nostalgic paintings of Santa (invariably dressed in red and white, the same colour as their label) who joyfully shares coke bottles with children against a snow-covered landscape (Altman, 2014).

The present study examines whether children spontaneously associate special events and festivities with food. In a previous study, Musher-Eizenman, Marx, and Taylor (2015) found that young children between the ages of 4 and 6 years spontaneously mentioned food when they described events such as having a playdate, going to the movie theatre or to a sporting event. Moreover, children's BMI percentile was moderately positively correlated with the number of food-related responses in their descriptions. The conclusion of this study was that thinking of specific situations triggers so called ‘event scripts’ (expectations about the occurrence and order of events, see Abelson, 1981) and that these scripts are more likely to include food in children with higher BMI percentiles. Given this finding, we also tested whether the number of food-related associations with special events was related to children's weight status.

According to memory researchers, it is important to distinguish between the *availability* and *accessibility* of associations (e.g., Tulving & Pearlstone, 1966). *Availability* is the mere presence of information in memory, and is necessary but not sufficient for an association to come to mind at a given time (Stacy, Leigh, & Weingardt, 1994). An association becomes *accessible* when it is activated in memory by a cue or process. Some associations are temporarily accessible (e.g., a certain association will be only triggered under specific circumstances), whereas other associations are chronically accessible. The accessibility of information depends on experience. Frequently made associations are more accessible than rarely made associations. Hence, for most children the information that a tree, Baby Jesus, turkeys and sweets are attributes of Christmas will be available in memory. Whether or not a child actually comes up with an association between Christmas and sweets depends on the accessibility of the association and the child's experiences. Accessibility on its turn depends on a child's experiences; for example, does (s)he receive more sweets during Christmas time than in normal days?

A way to measure the accessibility of associations in memory is

by *free-word association tests* (Stacey, Ames, & Grenard, 2006). In a free-word association test participants report the first word that comes to mind in response to a cue word, phrase or picture. Free-word association tests are considered an indirect measurement method because they attempt to assess *spontaneous* associations related to the target concept (Stacy et al., 2006). Word association tests have been extensively researched in the domain of substance (ab)use. It was found that associations measured with these tests are reliable predictors of subsequent alcohol intake (Stacy, 1997; see also Stacy & Wiers, 2010, p. 9 for a discussion). According to Stacy and colleagues, measuring these associations is meaningful because they “offer a glimpse at concept activation processes relevant to behaviour choices” (Stacy et al., 2006, p. 78).

To summarize, the goal of the present study was to examine the influence of external cues in overweight and normal weight primary school children. More specifically, we examined children's associations between special events and food, using a free-word association test. We expected that overweight and obese children would generate with more food-related associations when thinking about a special event than normal weight children. We also examined the relation between the number of food-related associations and children's choices for a food (candies) versus non-food gift (toys). Our expectation was that higher numbers of food-related associations as measured by the word association test would predict choice for a food gift.

2. Method

2.1. Participants

We recruited 114 junior high school students in fifth grade (age range 10–13 years, M age = 10.82, SD = .68, 57 females) of a public school in Rheydt, Germany. The school was located in a predominantly middle-lower class neighbourhood.

2.2. Materials and measures

2.2.1. Free-word association task

To assess children's spontaneous associations related to festive events or special occasions, we prepared free-word association booklets based on previous use of free association methods (e.g., Rozin, Kurzer, & Cohen, 2002, Stacy, 1997). The booklet consisted of five target words that all referred to festive or recreational events and were *Christmas*, *holidays*, *birthday party*, *carnival* and *weekend*. The target words were selected in consultation with the children's teacher to ensure that these (a) indeed referred to a special occasion or festive event, and (b) would be recognised as such by the children irrespective of their nationality or religious background.

2.2.2. Food and non-food items

Upon completion of the word association task, children could, if they wished to, pick one of eight rewards. The rewards consisted of four food items (candies; chewy sweets with different flavours and small chocolate bars) and four non-food items (toys; finger skateboard, top trump cards, Rubik's cube and a bracelet).

2.2.3. Height and body weight

At the very end of the experiment, all children were individually weighed and measured (without shoes) using a digital scale and a folding rule.

2.2.4. Demographic measures

As a part of the introduction talk, the experimenter asked the children for their age, religion, place of birth, ethnicity and noted down their gender.

2.3. Procedure

The standing ethical committee of the Faculty of Psychology and Neuroscience of Maastricht University, The Netherlands, approved the study. Two weeks before the study, parents or legal guardians of all fifth grade students of the public school in Rheydt, Germany received an information letter about the study and were asked for permission and to return a signed informed consent form. Parents or guardians were also asked to indicate whether their child had a food allergy and/or diabetes and it was explained that children having one of these conditions could not participate for health and safety reasons. One week before the study, the experimenter introduced herself to the students and announced the study. The study was presented as a study on “your thoughts about festive events.”

At the actual testing day, children were tested individually in a separate room in the school. During the introduction talk, the experimenter introduced herself and asked for and recorded each participant's demographic information. Then she explained and introduced the free-word association booklet as follows: “We are going to play a word game to find out what you think when I refer to certain events. I want to ask you to react spontaneously to my questions. Try not to think too long about your answers: simply write down the first things that come to your mind. There are no right or wrong answers. It is very important that you, when you return to your classroom, do not discuss the game with your other classmates. When you tell your classmates what questions you had to answer they might find it difficult to come up with their own answers! We will now practice the word game. I will give you an example first, the word ‘book’. If I hear ‘book’, the first five words I think of are: Reading, drinking hot chocolate, character, privacy, and vacation. Now you try: Can you please write down the first five words you think of when you think of a ‘book’?” When the child had written down his or her associations, the experimenter continued: “Let's practise this once more: Can you write down five words that come to mind when you think of a ‘house’? Please remember, it is all about your first thoughts, there are no right or wrong answers.”

When it was clear that the children understood the task, they started the free word association task in the remainder of the booklet. The next five pages of the booklet consisted of the free-word association memory task (one target word per page). A participant was instructed to completely finish one word association task at a time and not to turn ahead or back to next or earlier word association tasks.

After finishing the five word association tasks, the participant was thanked and asked if (s)he would like to pick one of four candies or four toys as a reward. Participants had the option to not choose a reward if they did not like the sweets or toys. To ensure that each child actually selected the reward that (s)he wanted, the experimenter left the room, under the pretext of drinking a glass of water, for about 2 min. Finally, the experimenter measured each participant's height and weight.

4. Results

4.1. Participant characteristics

Of the original sample of 114 participants, 111 children were included in the analyses. One of the excluded participants (female) reported seven food-related associations, and was therefore considered an outlier. This value was more than 3 standard deviations above the mean of the total group of participants of which the mean number of food-related associations was 2.10 ($SD = 1.42$). Data of two other female participants were discarded because they did not complete the word association task (they only provided

associations with the first target word but not for the other four target words).

BMI percentile of participants was determined by using the German reference percentile data published by the Arbeitsgruppe Adipositas im Kindes- und Jugendalter (AGA) set for children and adolescents between 0 and 18 years (Kromeyer-Hauschild et al., 2001). We determined four BMI percentile groups for each child in our sample by applying the recommended percentile distribution relative to age and gender (underweight = below 10th percentile; normal weight = between 10th–90th percentile; overweight = between 90th–97th percentile; obese = above 97th percentile). Table 1 provides an overview of the age, BMI, weight status, and religious background and country of birth for each gender and for the total sample.

4.2. Word associations

In total, the sample of 111 children provided 2775 ($111 * 5$ associations * 5 events) word associations with the five festive and recreational events (Christmas, holidays, birthday party, carnival, weekend). Two independent coders classified each word into one of two categories: “food related” or “not food related”. The coders agreed on 99.2% of the classifications and a third coder classified the 0.08% words on which the coders disagreed. Of the 2775 associations, 232 associations (8.36%) referred to food. On average, the children wrote down 2.09 ($SD = 1.34$) word associations that related to food.

Our first hypothesis was that number of associations between festive event and food was positively related to children's weight. We found a negative correlation between children's BMI percentile category and number of food associations, $r(111) = -0.22$, $p = .02$. Thus, in contrast to our expectation, we observed that the higher a child's BMI percentile, the fewer food-related associations with festivities and special events were listed.

Next, we analysed for possible differences in number of food-related associations for two weight groups. Because there were relatively few children classified as obese and only one child as underweight (see Table 2), we created two weight groups: an underweight/normal weight group and an overweight/obese group. Children in the overweight/obese category listed fewer food-related associations than children in the underweight/normal weight category, $t_{two-sided}(109) = 2.20$, $p = .03$, $d = 0.54$. This result corroborated the negative correlation between BMI percentile and total number of food associations in which we observed as well that

Table 1
Age, BMI, weight status, religion and country of origin by gender.

Variable	Gender		
	Girls ($n = 54$)	Boys ($n = 57$)	Total ($N = 111$)
Age	$M = 10.80$ ($SD = 0.74$)	$M = 10.86$ ($SD = 0.64$)	$M = 10.83$ ($SD = 0.69$)
BMI	$M = 19.93$ ($SD = 4.04$)	$M = 19.08$ ($SD = 3.17$)	$M = 19.49$ ($SD = 3.63$)
BMI percentile:			
Underweight	1 (1.9%)	0 (0%)	1 (0.9%)
Healthy weight	36 (66.7%)	40 (70.2%)	76 (68.5%)
Overweight	8 (14.8%)	11 (19.3%)	19 (17.1%)
Obese	9 (16.7%)	6 (10.5%)	15 (13.5%)
Religion:			
Catholic	24 (44.4%)	24 (42.1%)	48 (43.2%)
Evangelical	13 (24.1%)	9 (15.8%)	22 (19.8%)
Muslim	3 (5.6%)	5 (8.8%)	8 (7.2%)
No religious affiliation	14 (25.9%)	19 (33.3%)	33 (29.7%)
Country of origin:			
Germany	49 (90.7%)	51 (89.5%)	100 (90.1%)
Other	7 (9.3%)	6 (10.5%)	12 (9.9%)

Table 2

Mean (SD) number of food associations per event and total number (SD) of food associations by weight status.

Event:	Weight status					
	Underweight/ Normal (<i>n</i> = 77)		Overweight/ Obese (<i>n</i> = 34)		Total (<i>N</i> = 111)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Christmas	0.40	0.54	0.38	0.49	0.40	0.53
Holidays	0.12	0.33	0.03	0.17	0.09	0.29
Birthday	0.81	0.80	0.53	0.66	0.72	0.77
Carnival	0.81	0.73	0.65	0.60	0.76	0.69
Weekend	0.14	0.42	0.09	0.29	0.13	0.38
Total	2.27	1.35	1.68	1.22	2.09	1.34

children with a higher BMI percentile report less food-related associations. When we examined the number of food-related associations for each of the five events separately, we found no differences between the children in the underweight/normal weight group and the children in the overweight/obese group, all *t*'s < 1.77, *ns*.

Finally, we analysed whether demographic variables (age, gender, religion, country of birth) were related to the total number of food associations and entered age, gender, religion and country of birth as predictor variables to a multiple regression analysis. Only gender was significantly related to the total number of food associations, $t(109) = 1.99$, $p = .049$, $d = .38$. Boys had significantly more food-related associations ($M = 2.33$, $SD = 1.42$) than girls ($M = 1.83$, $SD = 1.21$). A subsequent ANCOVA showed that the gender difference in number of food associations was no longer significant, $F(1, 108) = 3.21$, $p = .08$, $\eta_p^2 = .03$, when BMI percentile was added as a covariate, $F(1, 108) = 4.34$, $p = .04$, $\eta_p^2 = .04$. Thus, the higher number of food associations of boys can be explained by the fact that in this sample, boys had a lower BMI than girls. Age, religion and country of birth were not related to the total number of food-related associations, all *t*'s < 1.02, *ns*.

4.3. Choice for a candy or a toy

We hypothesized that the number of food-related associations would predict a subsequent choice for a candy or toy as a reward. Therefore, we compared the number of food associations of children who chose for a candy and children who chose for a toy to test the hypothesis. Because three children wanted no gift (neither a candy nor a toy), the gift choices of 108 children were included in the analyses. There was no difference in number of food associations between children who wanted a candy ($n = 26$; $M = 2.08$, $SD = 1.02$) or children who opted for a toy ($n = 82$; $M = 2.11$, $SD = 1.22$), $t_{two-sided}(106) = .11$, $p = .91$, $d = .03$. We also examined whether the choice for a candy or toy was influenced by demographic variables, and the variables age, gender, BMI percentile and country of birth were entered in a logistic regression with reward choice as dependent variable. None of the variables were significantly related to food choice (all *t*'s < 1, *ns*).

5. Discussion

This study investigated children's associations of special events with food. Our primary aim was to examine if overweight and obese children associated special events more frequently with food than normal weight and lean children. Unexpectedly, our results pointed in the opposite direction of our prediction. It was not the overweight and obese children, but their leaner peers who reported more food-related associations when thinking of Christmas,

carnival, holidays, the weekend or birthdays. The difference in number of food-related associations between leaner and heavier children was small, but significant and had a moderate effect size. A correlational analysis showed a similar result: We found a modest, but significant negative correlation between children's BMI and number of food-related associations with special events. We obtained a gender differences in number of food associations: boys reported more food-related associations than girls but this difference can be explained by the lower BMI of boys than girls in our sample. Other demographic and control variables (age, religion, country of birth) were not systematically related to number of food-related associations.

The reason why the leaner children reported more food-related associations than the overweight and obese children is not immediately clear. Our result is in contrast with the findings of Musher-Eizenman et al. (2015) who found that food featured more prominently in spontaneous descriptions of events when children's BMI percentile increased. Although this was found in a much younger age group (4–6 years old), for different events (e.g., playdate, movie theatre, sporting event), tested by eliciting event scripts in oral interviews instead of a written free-word association test, it is still surprising that our result points in the opposite direction.

A possible, but speculative explanation is that in leaner children specific foods are more exclusively tied to special occasions than in overweight children. For example, if lean children are permitted to eat ice cream at particular moments only (e.g., at Saturday evenings but never on normal weekdays), their association between weekend and ice cream is most likely stronger than for children who are allowed ice cream at multiple occasions. If this is true, then certain occasions are more distinctive or diagnostic for food in leaner children (see Beike & Sherman, 1994 for a discussion of the relation between distinctiveness, accessibility and memory). Relations between occasions and foods that are distinctive are likely to be more accessible (Beike & Sherman, 1994; Higgins, 1996). Relatedly, some evidence exists that parents applying a consistent, controlling (not buying certain foods or forbidding certain foods) food parenting style are more successful in restricting their children's caloric intake (Larsen et al., pp. 250–251). Perhaps, parents of overweight children have more liberal food rules and allow their children to eat treats and snacks not exclusively on special days or occasions. In other words, for overweight and obese children special foods may be less “special” and distinctive, and more loosely related to particular days or occasions than for their leaner counterparts resulting in weaker and/or less accessible associative links.

Our second hypothesis concerned the predictive value of food-related associations and subsequent gift choice and we hypothesized that the number of associations between special events and food would result in more frequent gift choices for candy (versus a toy). The hypothesis was not confirmed: gift choice was unrelated to number of food associations and both normal and overweight children preferred toys to candies. Gift choice was also unrelated to gender, BMI percentile, religious background or country of origin. This finding seems in contrast to earlier findings from studies that show that responses at word association tasks predict subsequent behaviour (e.g., Stacy, 1997). It may be that our dichotomous gift choice measure (choosing between a candy or a toy) was not sensitive enough to pick up any differences between children with relatively more and few food associations.

It should also be noted that in our sample of 10–13 year old children, associations of special events with food were not overly present. Fewer than 10% of children's associations were related to food, and associations with other stimuli, activities or states were much more frequent (for example, Christmas was associated with

going to church, little lights, family gatherings). This is low in comparison to the study of Musher-Eizenman et al. (2015) who found that nearly a quarter of the activities mentioned by 4–6 year old children in their description of events were food-related. Whether the number of food-related associations should be considered as “high” or “low” is hard to decide and we would like to stress that we did not lead children in any way on the food path. It is possible that the environmental context of the test (assessment in a school situation) made particular associations more likely (e.g., associating weekend and holiday with being off school, no homework, free-time). It may be that the associative content would have been different (and more food-related?) when children were tested in a different context such as their home environment, in a supermarket or at their dining tables. The influence of environmental context on associations has been demonstrated in several studies (Fazio & Olson, 2003; Roefs et al., 2006). For example, obese participants who imagined themselves in a restaurant context (preparing a gourmet dinner for a wedding banquet) preferred high-fat food to low-fat food, whereas opposite preferences was found when they were led to think about health eating habits (Roefs et al., Experiment 1, 2006). Of course, it may also be that the modest number of food-related associations accurately reflects that children tend to think of other things than food when confronted with special events.

Several limitations to this study must be considered. First, because the number of food-related associations was relatively low it could be that a “floor effect” limited the possibility to detect differences between children and/or the relation with the subsequent gift choice. Second, we did not measure children's hunger at the testing moment or their liking for the types of candies and toys offered. Also, we did not inventory children's eating patterns and their parents' food parenting style. Future research could include this information in order to better understand potential differences in food-associations between leaner and overweight children.

6. Conclusion

This study is one of the few to examine spontaneous associations of special events with food in children. We used a free-word association test to examine children's spontaneous association to uncover some of the processes that may underlie children's preferences for food and food choice. In contrast to our hypothesis, overweight children generated fewer food-related associations than normal-weight children.

Given the rising numbers of childhood obesity (World Health Organization, 2013) it is important to understand how the environment influences children's food associations and expectations about when to consume what food. Studies have indicated that children increasingly consume high caloric snacks (e.g., Jahns, Siega-Riz, & Popkin, 2001) and that snacks account for a large part of the total daily calories in school-age children (Roblin, 2007). Because the products associated with festive or special occasions (e.g., cakes, crisps, large meals, sweets) are almost always snacks or high caloric (Kittler & Sucher, 2008), it is important to know if children expect these at rare occasions only or on “normal” weekdays as well.

In future research, food-related associations of overweight and normal weight children could be studied in relation to their eating habits and their parent's food parenting style to examine if associations are influenced by restrictive or permissive food rules at home. Such studies could identify whether good food parenting includes reserving unhealthy snacks, sweets and treats for special occasions only. Although this may strengthen children's associations between special events and specific food it will also help to

keep special foods “special”, and therefore not to be expected and consumed on a daily basis.

References

- Abelson, R. P. (1981). Psychological status of the script concept. *The American Psychologist*, 36, 715–729. <http://dx.doi.org/10.1037/0003-066X.36.7.715>.
- Altman, T. (2014, December 17). *How Santa brought Coca-Cola in from the cold* [Web log post]. Retrieved from <http://americanhistory.si.edu/blog/santa-coca-cola>.
- Beike, D. R., & Sherman, S. J. (1994). Social inferences: inductions, deductions and analogies. In R. S. Wyer, & T. K. Srull (Eds.), *Handbook of social cognition: Basic processes* (pp. 209–286). Hillsdale, NJ: Lawrence Erlbaum.
- Bellisle, F., Dalix, A. M., & Slama, G. (2004). Non food-related environmental stimuli induce increased meal intake in healthy women: comparison of television viewing versus listening to a recorded story in laboratory settings. *Appetite*, 43, 175–180. <http://dx.doi.org/10.1016/j.appet.2004.04.004>.
- Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: their meaning and use. *Annual Review of Psychology*, 54, 297–327. <http://dx.doi.org/10.1146/annurev.psych.54.101601.145225>.
- Ferriday, D., & Brunstrom, J. M. (2010). “I just can't help myself”: effects of food-cue exposure in overweight and lean individuals. *International Journal of Obesity*, 35, 142–149. <http://dx.doi.org/10.1038/ijo.2010.117>.
- Herman, C. P., & Polivy, J. (2008). External cues in the control of food intake in humans: the sensory-normative distinction. *Physiology & Behavior*, 94, 722–728. <http://dx.doi.org/10.1016/j.physbeh.2008.04.014>.
- Higgins, E. T. (1996). Knowledge activation: accessibility, applicability, and salience. In E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). New York: Guilford.
- Holtzman, J. D. (2006). Food and memory. *Annual Review of Anthropology*, 35, 361–378. <http://dx.doi.org/10.1146/annurev.anthro.35.081705.123220>.
- Jahns, L., Siega-Riz, A. M., & Popkin, B. (2001). The increasing prevalence of snacking among US children from 1977 to 1996. *The Journal of Pediatrics*, 138, 493–498. <http://dx.doi.org/10.1067/mpd.2001.112162>.
- Jansen, A., Theunissen, N., Slechten, K., Nederkoorn, C., Boon, B., Mulken, S., et al. (2003). Overweight children overeat after exposure to food cues. *Eating Behaviors*, 4, 197–209. [http://dx.doi.org/10.1016/S1471-0153\(03\)00011-4](http://dx.doi.org/10.1016/S1471-0153(03)00011-4).
- Kittler, P. G., & Sucher, K. P. (2008). *Food and culture* (5th ed.). Belmont, CA: Thomson.
- Kromeyer-Hauschild, K., Wabitsch, M., Kunze, D., Geller, F., Geiss, H. C., Hesse, V., et al. (2001). Perzentile für den body-mass-index für das kindes- und jugendalter unter herausziehung verschiedener Deutscher stichproben. *Monatsschrift Kinderheilkunde*, 149, 807–818.
- Larsen, J. K., Hermans, R. C. J., Sleddens, E. F. C., Engels, R. C. M. E., Fisher, J. O., & Kremers, S. P. J. (2015). How parental dietary behavior and food parenting practices affect children's dietary behavior: interacting sources of influence? *Appetite*, 89, 246–257. <http://dx.doi.org/10.1016/j.appet.2015.02.012>.
- Musher-Eizenman, D. R., Marx, J. M., & Taylor, M. B. (2015). It's always snack time: an investigation of event scripts in young children. *Appetite*, 85, 66–69. <http://dx.doi.org/10.1016/j.appet.2014.11.013>.
- Polivy, J., Herman, C. P., & Coelho, J. S. (2008). Caloric restriction in the presence of attractive food cues: external cues, eating, and weight. *Physiology & Behavior*, 94, 729–733. <http://dx.doi.org/10.1016/j.physbeh.2008.04.010>.
- Roblin, L. (2007). Childhood obesity. Food, nutrient, and eating-habit trends and influences. *Applied Physiology, Nutrition, and Metabolism*, 32, 635–645.
- Roefs, A., Quaedackers, L., Werrij, M. Q., Wolters, G., Havermans, R., Nederkoorn, C., et al. (2006). The environment influences whether high-fat foods are associated with palatable or with unhealthy. *Behaviour Research and Therapy*, 44, 715–736. <http://dx.doi.org/10.1016/j.brat.2005.05.007>.
- Rozin, P., Kurzer, N., & Cohen, A. B. (2002). Free associations to “food”: the effects of gender, generation, and culture. *Journal of Research in Personality*, 36, 419–441. [http://dx.doi.org/10.1016/S0092-6566\(02\)00002-8](http://dx.doi.org/10.1016/S0092-6566(02)00002-8).
- Salvy, S.-J., Coelho, J. S., Kieffer, E., & Epstein, L. H. (2007). Effects of social contexts on overweight and normal-weight children's food intake. *Physiology & Behavior*, 92, 840–846. <http://dx.doi.org/10.1016/j.physbeh.2007.06.014>.
- Schachter, S. (1968). Obesity and eating. *Science*, 161, 751–756. <http://dx.doi.org/10.1126/science.161.3843.751>.
- Stacy, A. W. (1997). Memory activation and expectancy as prospective predictors of alcohol and marijuana use. *Journal of Abnormal Psychology*, 106, 61–73. <http://dx.doi.org/10.1037/0021-843X.106.1.61>.
- Stacy, A. W., Ames, S. L., & Grenard, J. L. (2006). Word association tests of associative memory and implicit processes: theoretical and assessment issues. In R. W. Wiers, & A. W. Stacy (Eds.), *Handbook of implicit cognition and addiction* (pp. 75–90). Thousand Oaks, CA: Sage.
- Stacy, A. W., Leigh, B. C., & Weingardt, K. R. (1994). Memory accessibility and association of alcohol use and its positive outcomes. *Experimental and Clinical Psychopharmacology*, 2, 269–282. <http://dx.doi.org/10.1037/1064-1297.2.3.269>.
- Stacy, A. W., & Wiers, R. W. (2010). Implicit cognition and addiction: a tool for explaining paradoxical behavior. *Annual Review of Clinical Psychology*, 6, 551–575. <http://dx.doi.org/10.1146/annurev.clinpsy.121208.131444>.
- Stroebele, N., & De Castro, J. M. (2004). Effect of ambience on food intake and food choice. *Nutrition*, 20, 821–838. <http://dx.doi.org/10.1016/j.nut.2004.05.012>.
- Tulving, E., & Pearlstone, Z. (1966). Availability versus accessibility of information in memory for words. *Journal of Verbal Learning and Verbal Behavior*, 5, 381. [http://dx.doi.org/10.1016/S0022-5371\(66\)80002-8](http://dx.doi.org/10.1016/S0022-5371(66)80002-8).

- [dx.doi.org/10.1016/S0022-5371\(66\)80048-8](http://dx.doi.org/10.1016/S0022-5371(66)80048-8).
- Wansink, B., Payne, C. R., & Shimizu, M. (2010). "Is this a meal or snack?" Situational cues that drive perceptions. *Appetite*, 54, 214–216. <http://dx.doi.org/10.1016/j.appet.2009.09.016>.
- Wansink, B., & Sobal, J. (2007). Mindless Eating: the 200 daily food decisions we overlook. *Environment and Behavior*, 39, 106–123. <http://dx.doi.org/10.1177/0013916506295573>.
- Wardle, J. (1990). Conditioning processes and cue exposure in the modification of excessive eating. *Addictive Behaviors*, 15, 1–7. [http://dx.doi.org/10.1016/0306-4603\(90\)90047-2](http://dx.doi.org/10.1016/0306-4603(90)90047-2).
- World Health Organization. (2013). *Obesity and overweight fact sheet N° 311*. World Health Organization. <http://www.who.int/mediacentre/factsheets/fs311/en/index.html>.